OIPE JC59
MAR 08 2004
PATENT & TRADEMARK OFFICE

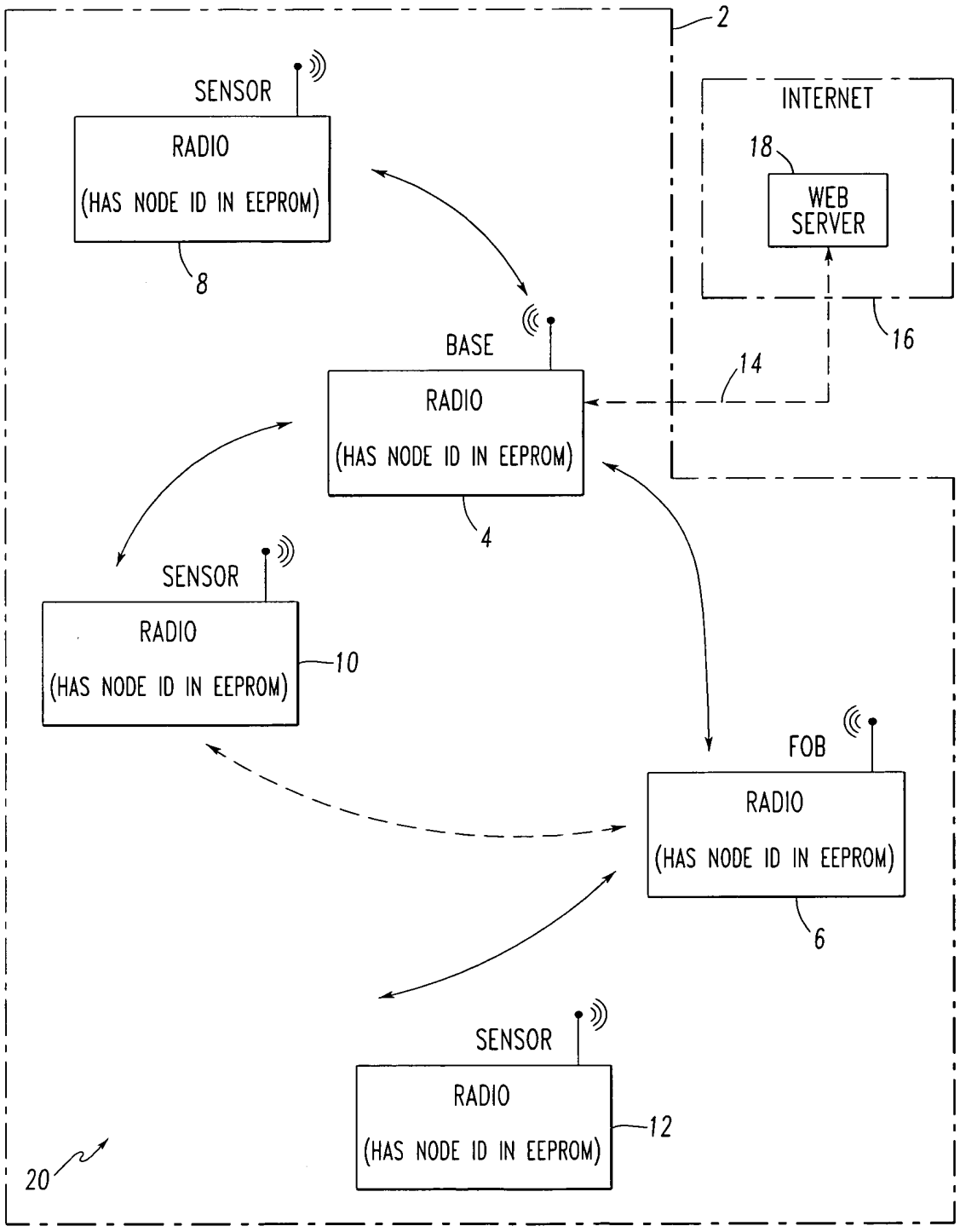

FIG. 1

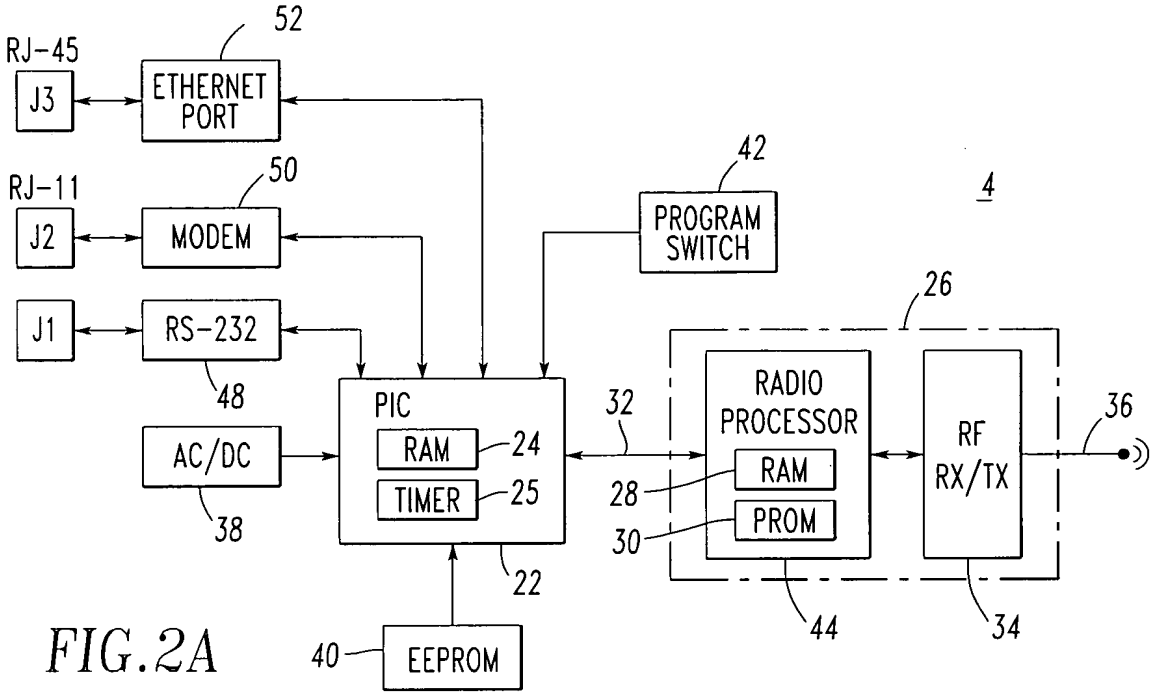
RJ-45
J3
ETHERNET PORT
52
RJ-11
J2
MODEM
50
J1
RS-232
48
AC/DC
38
PIC
RAM
24
TIMER
25
22
40
EEPROM
42
PROGRAM SWITCH
4
26
RADIO PROCESSOR
RAM
PROM
28
30
32
RF RX/TX
36
44
34

FIG.2A

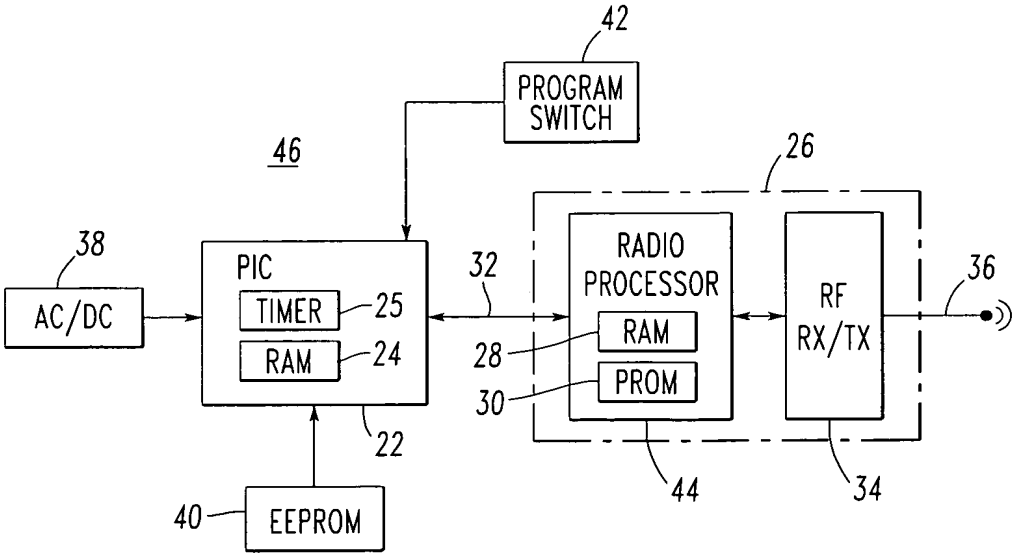
42
PROGRAM SWITCH
46
26
38
AC/DC
PIC
TIMER
25
RAM
24
22
40
EEPROM
32
RADIO PROCESSOR
RAM
PROM
28
30
RF RX/TX
36
44
34

FIG.2B

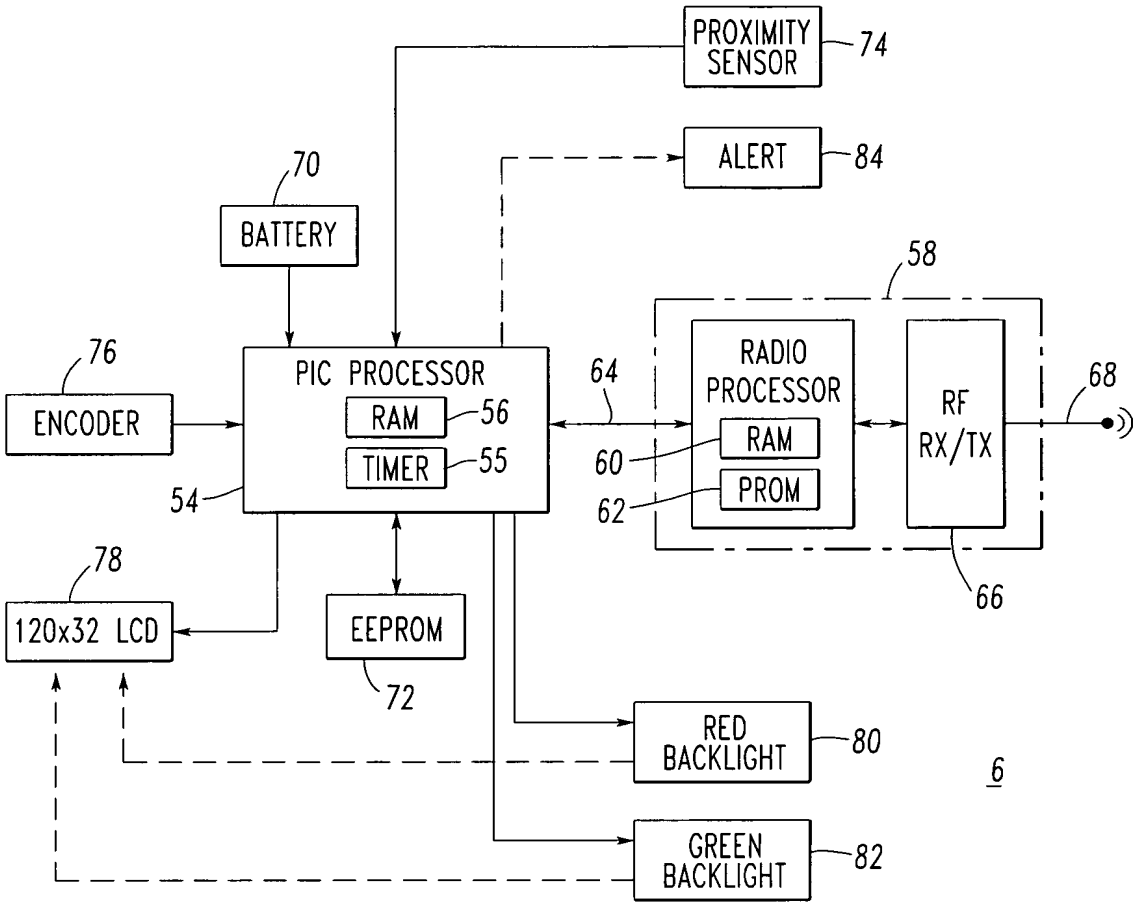
PROXIMITY SENSOR
74
ALERT
84
70
BATTERY
58
76
ENCODER
PIC PROCESSOR
RAM
56
TIMER
55
54
64
RADIO PROCESSOR
RAM
PROM
60
62
RF RX/TX
68
66
78
120x32 LCD
EEPROM
72
RED BACKLIGHT
80
6
GREEN BACKLIGHT
82

FIG.3

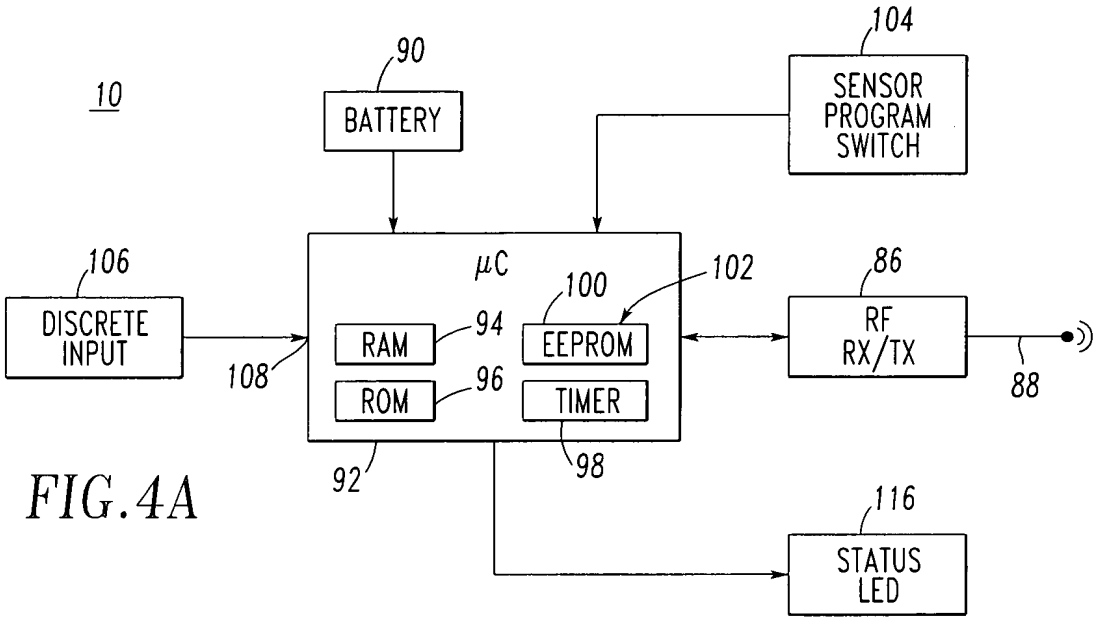
10
90
BATTERY
104
SENSOR PROGRAM SWITCH
106
DISCRETE INPUT
108
μC
RAM
94
ROM
96
EEPROM
100
TIMER
98
92
102
86
RF RX/TX
88
116
STATUS LED

FIG.4A

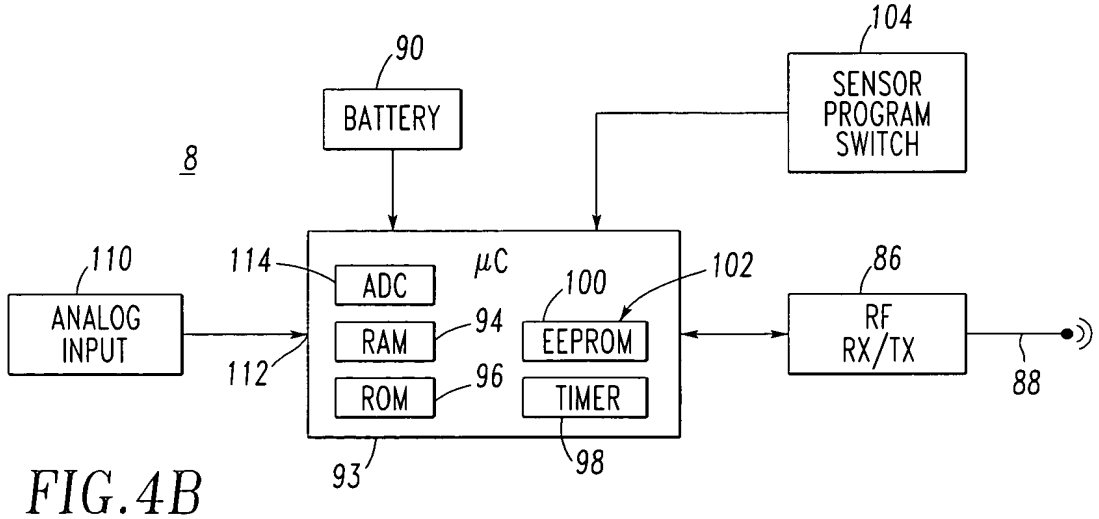
8
90
BATTERY
104
SENSOR PROGRAM SWITCH
110
ANALOG INPUT
112
114
ADC
μC
RAM
94
ROM
96
EEPROM
100
TIMER
98
93
102
86
RF RX/TX
88

FIG.4B

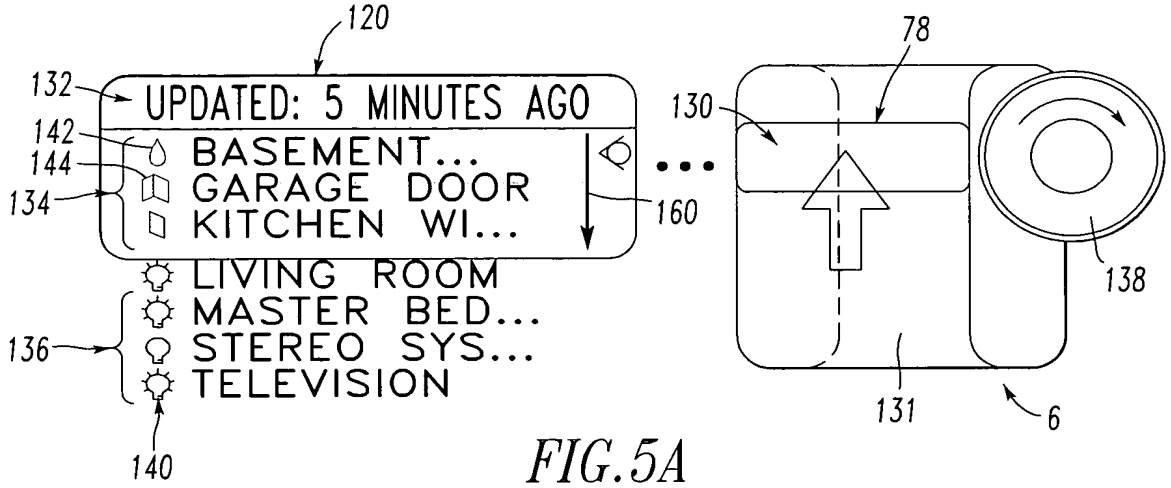

FIG.5A

FIG.5B

FIG.5C

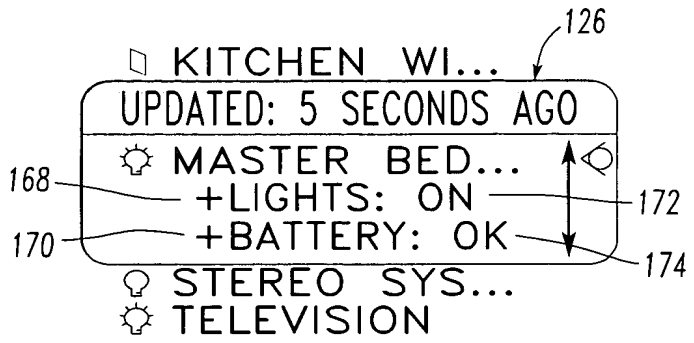
126
KITCHEN WI...
UPDATED: 5 SECONDS AGO
MASTER BED...
168
+LIGHTS: ON
172
170
+BATTERY: OK
174
STEREO SYS...
TELEVISION

FIG.5D

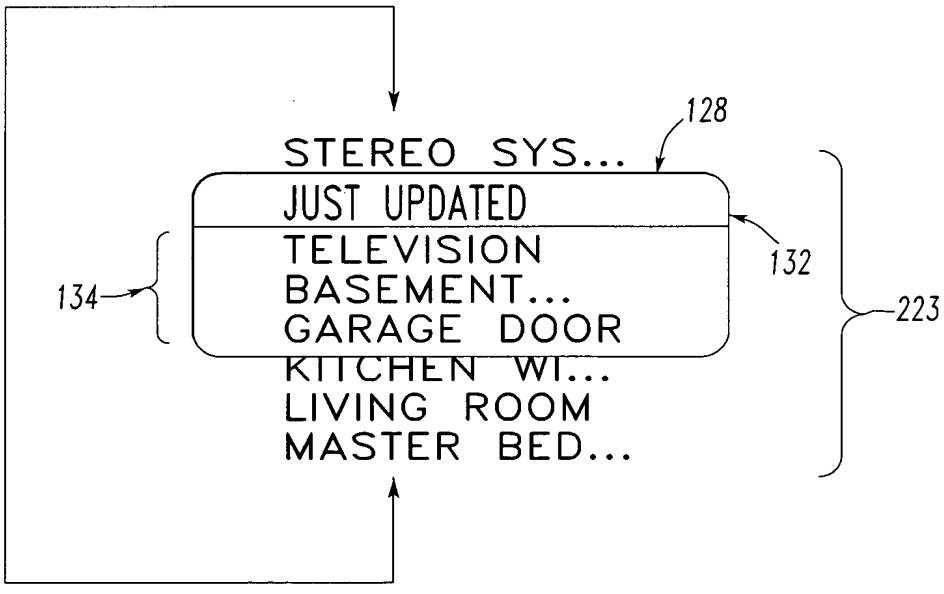
128
STEREO SYS...
JUST UPDATED
TELEVISION
BASEMENT...
GARAGE DOOR
KITCHEN WI...
LIVING ROOM
MASTER BED...
134
132
223

FIG.5E

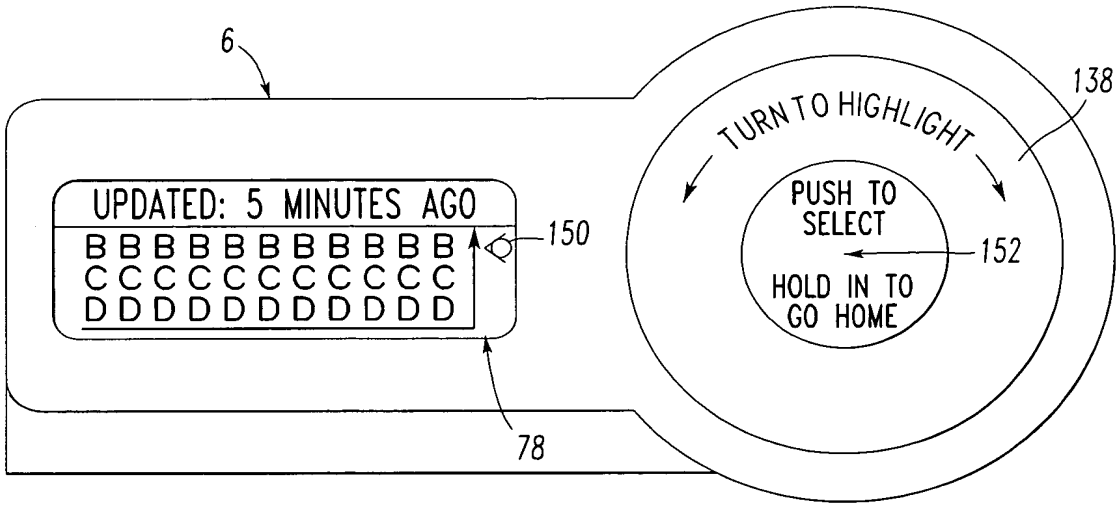
6
138
TURN TO HIGHLIGHT
UPDATED: 5 MINUTES AGO
B B B B B B B B B B B
C C C C C C C C C C C
D D D D D D D D D D D
150
PUSH TO SELECT
152
HOLD IN TO GO HOME
78

FIG.5F

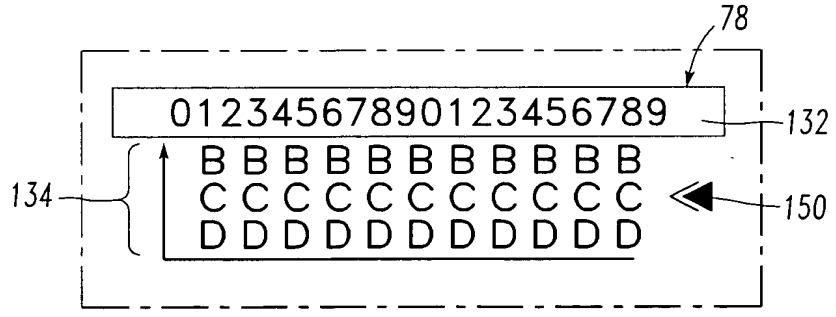
78
01234567890123456789
132
B B B B B B B B B B B
C C C C C C C C C C C
D D D D D D D D D D D
134
150

FIG.5G

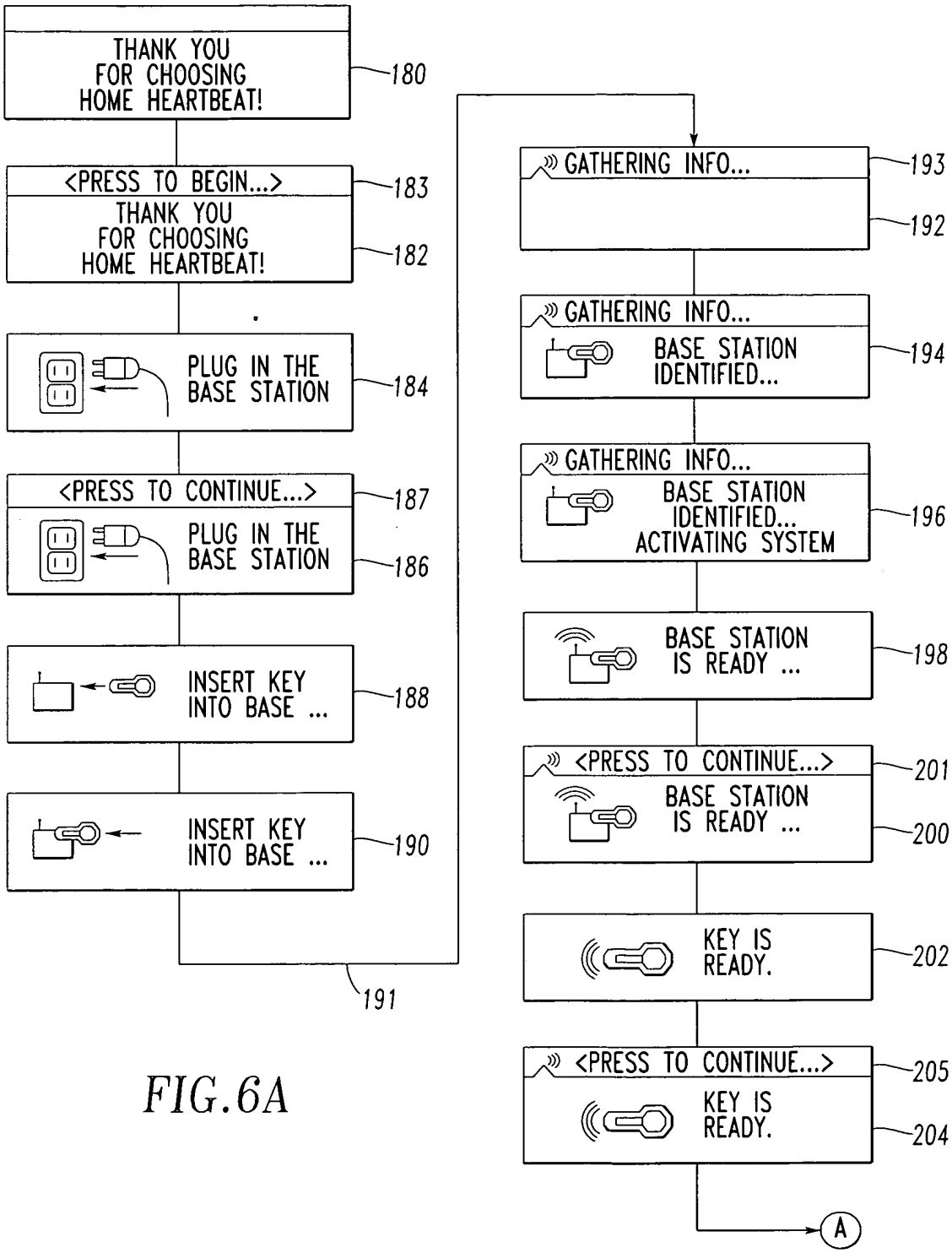
THANK YOU FOR CHOOSING HOME HEARTBEAT!
180
<PRESS TO BEGIN...>
THANK YOU FOR CHOOSING HOME HEARTBEAT!
183
182
PLUG IN THE BASE STATION
184
<PRESS TO CONTINUE...>
PLUG IN THE BASE STATION
187
186
INSERT KEY INTO BASE ...
188
INSERT KEY INTO BASE ...
190
191
GATHERING INFO...
193
192
GATHERING INFO...
BASE STATION IDENTIFIED...
194
GATHERING INFO...
BASE STATION IDENTIFIED... ACTIVATING SYSTEM
196
BASE STATION IS READY ...
198
<PRESS TO CONTINUE...>
BASE STATION IS READY ...
201
200
KEY IS READY.
202
<PRESS TO CONTINUE...>
KEY IS READY.
205
204
A

FIG.6A

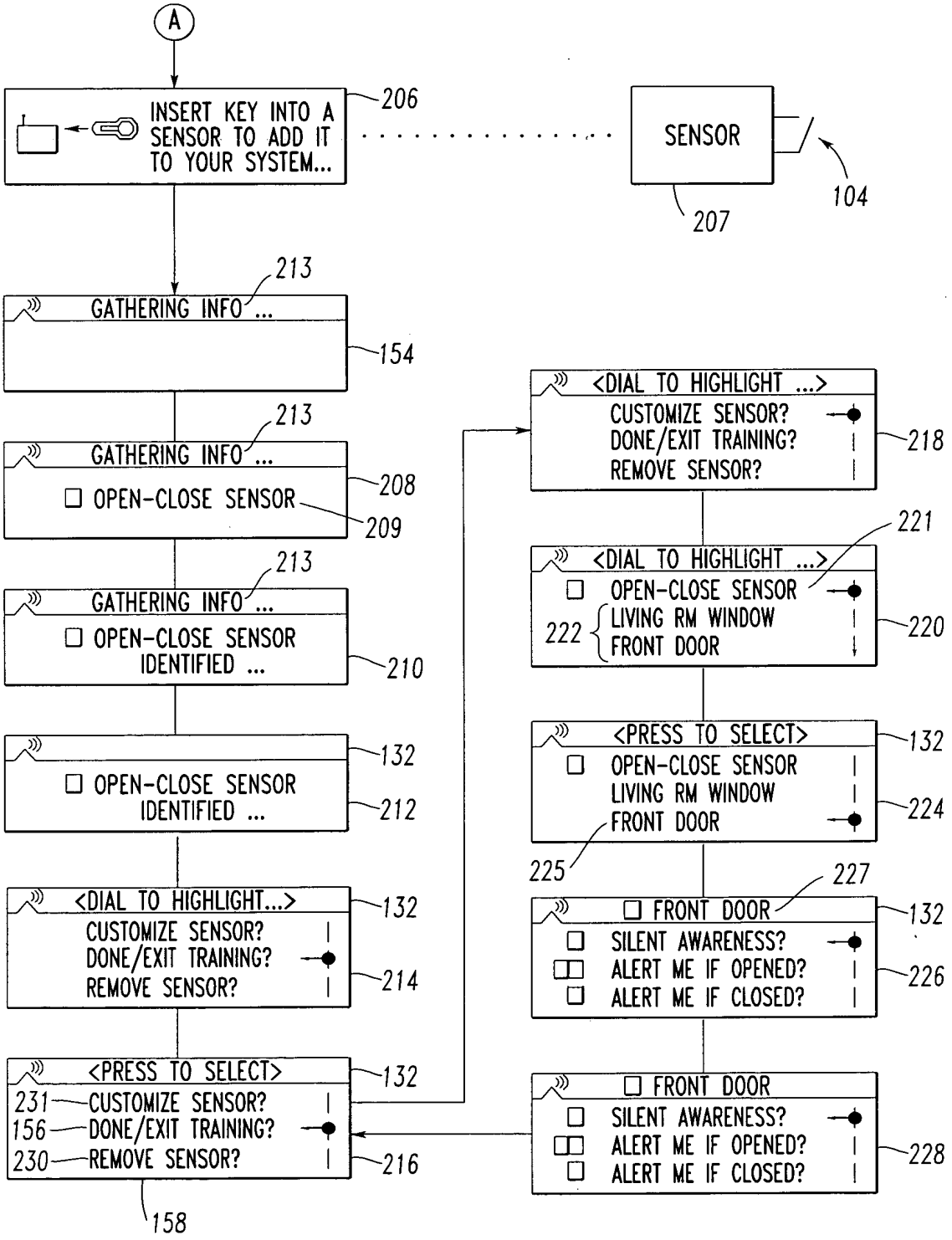
A
INSERT KEY INTO A SENSOR TO ADD IT TO YOUR SYSTEM...
206
SENSOR
104
207
GATHERING INFO ...
213
154
GATHERING INFO ...
213
OPEN-CLOSE SENSOR
208
209
GATHERING INFO ...
213
OPEN-CLOSE SENSOR IDENTIFIED ...
210
132
OPEN-CLOSE SENSOR IDENTIFIED ...
212
<DIAL TO HIGHLIGHT...>
132
CUSTOMIZE SENSOR?
DONE/EXIT TRAINING?
REMOVE SENSOR?
214
<PRESS TO SELECT>
132
231 CUSTOMIZE SENSOR?
156 DONE/EXIT TRAINING?
230 REMOVE SENSOR?
216
158
<DIAL TO HIGHLIGHT ...>
CUSTOMIZE SENSOR?
DONE/EXIT TRAINING?
REMOVE SENSOR?
218
<DIAL TO HIGHLIGHT ...>
221
OPEN-CLOSE SENSOR
222
LIVING RM WINDOW
FRONT DOOR
220
<PRESS TO SELECT>
132
OPEN-CLOSE SENSOR
LIVING RM WINDOW
FRONT DOOR
224
225
227
FRONT DOOR
132
SILENT AWARENESS?
ALERT ME IF OPENED?
ALERT ME IF CLOSED?
226
FRONT DOOR
SILENT AWARENESS?
ALERT ME IF OPENED?
ALERT ME IF CLOSED?
228

FIG.6B

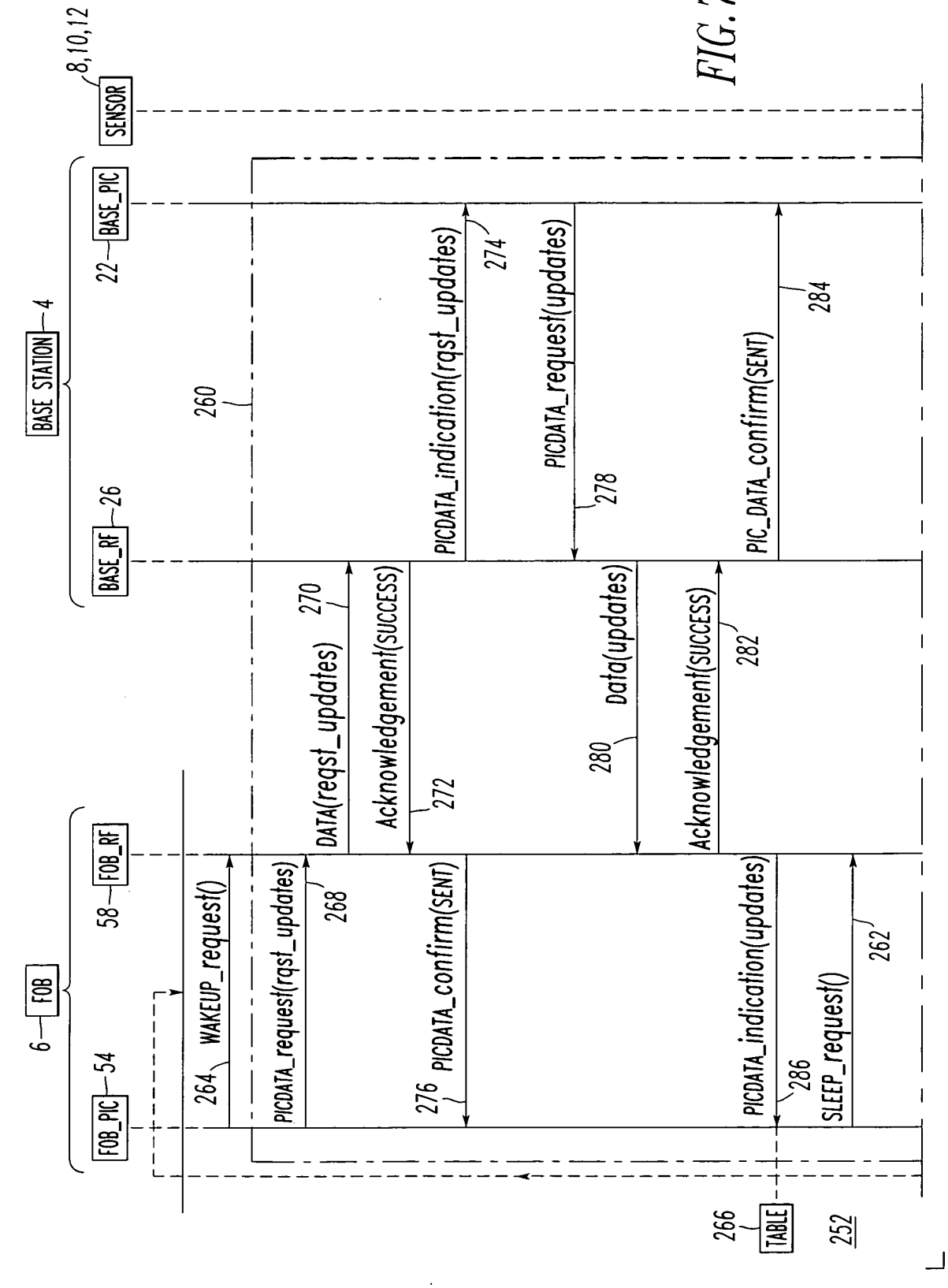
6
FOB
FOB_PIC
54
58
FOB_RF
BASE STATION
4
BASE_RF
26
22
BASE_PIC
8,10,12
SENSOR
TABLE
266
252
260
264
WAKEUP_request()
PICDATA_request(rqst_updates)
268
DATA(reqst_updates)
270
Acknowledgement(SUCCESS)
272
PICDATA_confirm(SENT)
276
PICDATA_indication(rqst_updates)
274
PICDATA_request(updates)
278
data(updates)
280
Acknowledgement(SUCCESS)
282
PIC_DATA_confirm(SENT)
284
PICDATA_indication(updates)
286
SLEEP_request()
262

FIG. 7A

FIG. 7B

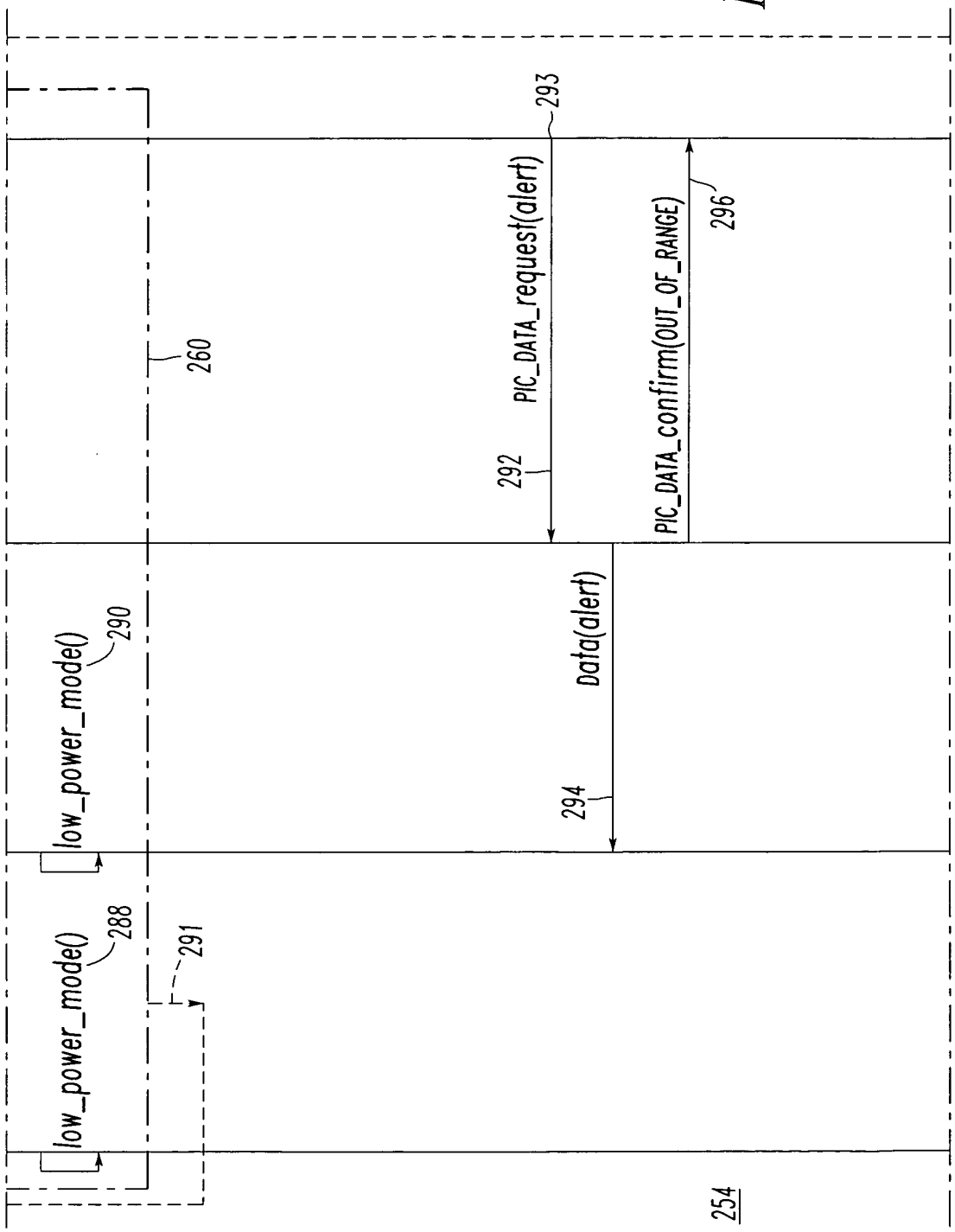
low_power_mode()
288
291
low_power_mode()
290
260
PIC_DATA_request(alert)
292
293
PIC_DATA_confirm(OUT_OF_RANGE)
296
Data(alert)
294
254

FIG. 7C

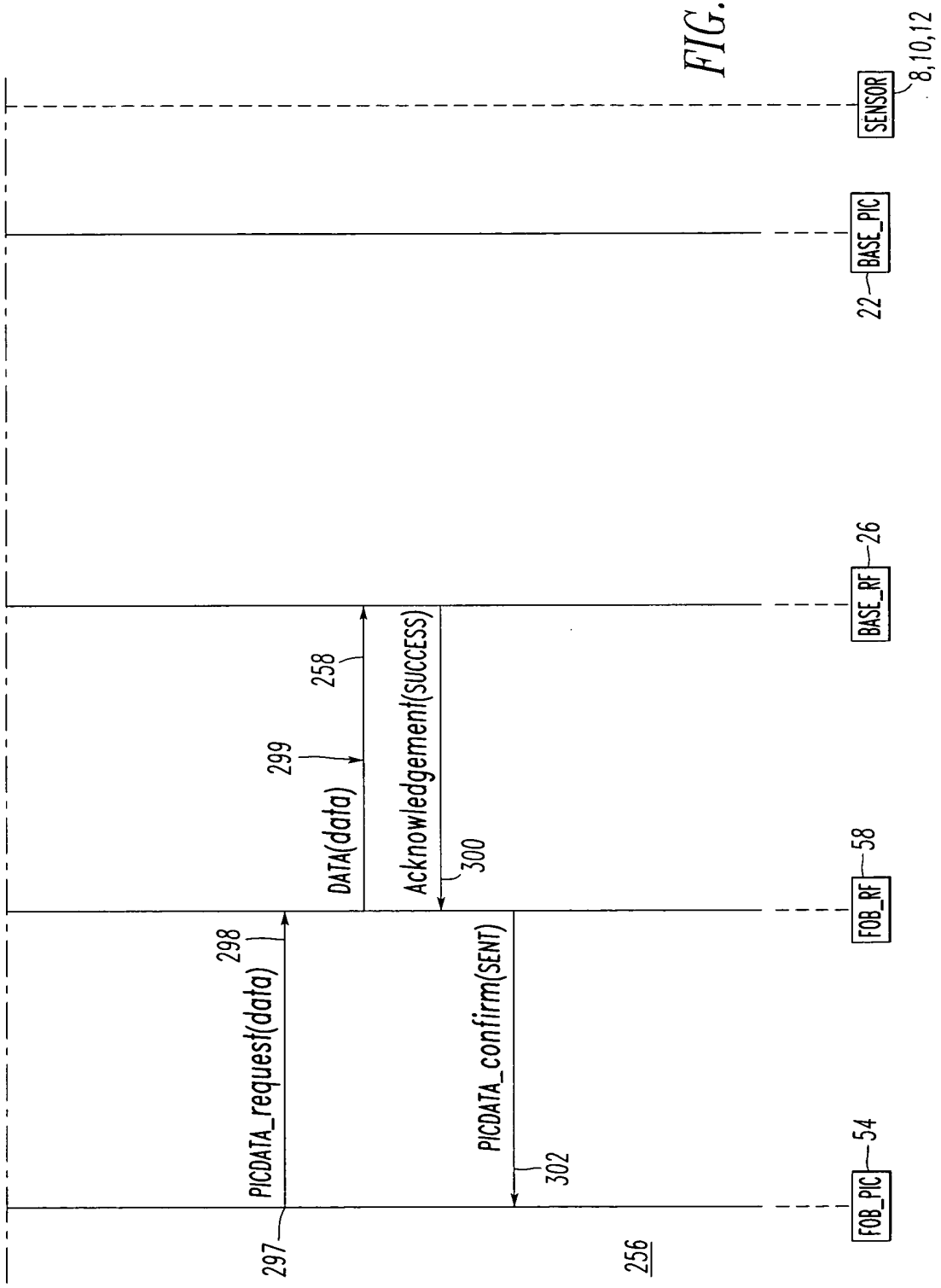
SENSOR
8,10,12
BASE_PIC
22
BASE_RF
26
FOB_RF
58
FOB_PIC
54
256
297
PICDATA_request(data)
298
DATA(data)
299
258
Acknowledgement(SUCCESS)
300
PICDATA_confirm(SENT)
302

FIG.8A

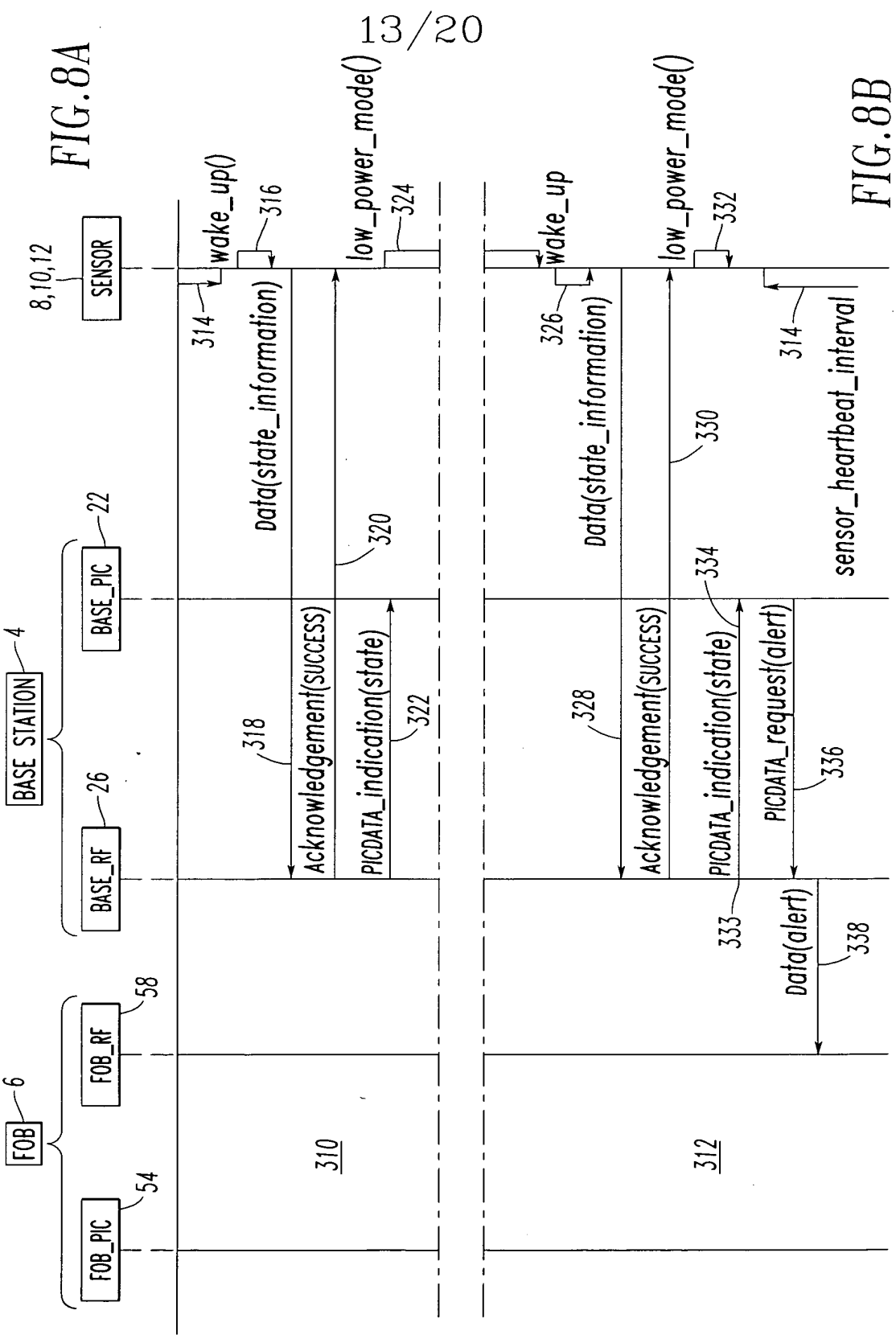
FOB
6
FOB_PIC
54
FOB_RF
58
BASE STATION
4
BASE_RF
26
BASE_PIC
22
8,10,12
SENSOR
310
312
wake_up()
316
314
data(state_information)
low_power_mode()
324
320
Acknowledgement(SUCCESS)
318
PICDATA_indication(state)
322
wake_up
326
328
330
low_power_mode()
332
334
PICDATA_request(alert)
336
333
data(alert)
338
sensor_heartbeat_interval

FIG.8B

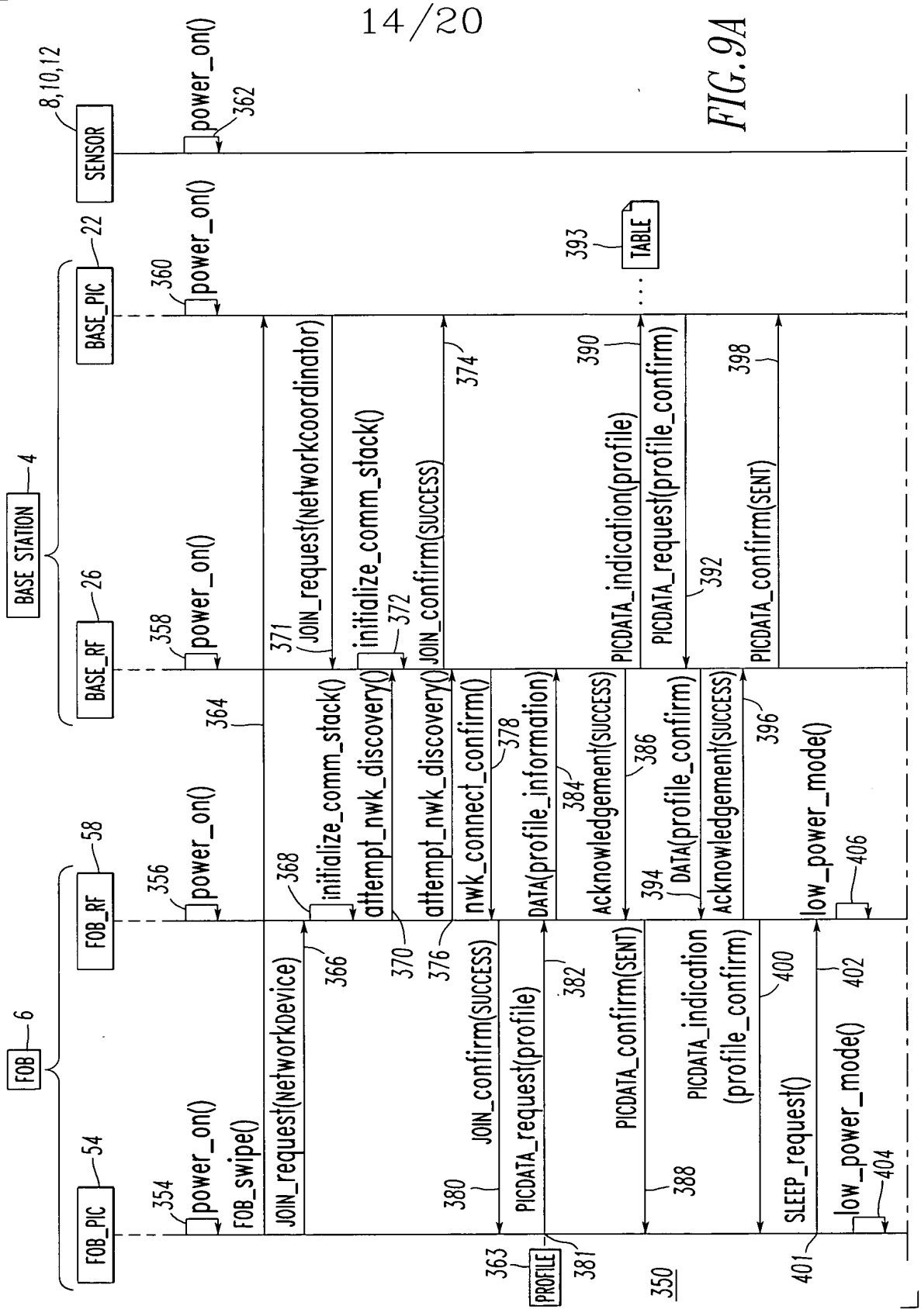
FOB
6
FOB_PIC
54
FOB_RF
58
BASE STATION
4
BASE_RF
26
BASE_PIC
22
8,10,12
SENSOR
TABLE
393
power_on()
362
power_on()
360
power_on()
358
power_on()
356
power_on()
354
FOB_swipe()
JOIN_request(networkDevice)
366
initialize_comm_stack()
368
JOIN_request(networkCoordinator)
371
initialize_comm_stack()
372
attempt_nwk_discovery()
370
attempt_nwk_discovery()
376
JOIN_confirm(SUCCESS)
374
nwk_connect_confirm()
378
JOIN_confirm(SUCCESS)
380
PICDATA_request(profile)
382
DATA(profile_information)
384
PICDATA_indication(profile)
390
Acknowledgement(SUCCESS)
386
PICDATA_request(profile_confirm)
392
DATA(profile_confirm)
394
PICDATA_confirm(SENT)
388
Acknowledgement(SUCCESS)
396
PICDATA_confirm(SENT)
398
PICDATA_indication
(profile_confirm)
400
SLEEP_request()
401
low_power_mode()
402
low_power_mode()
406
low_power_mode()
404
PROFILE
363
381
350

FIG. 9A

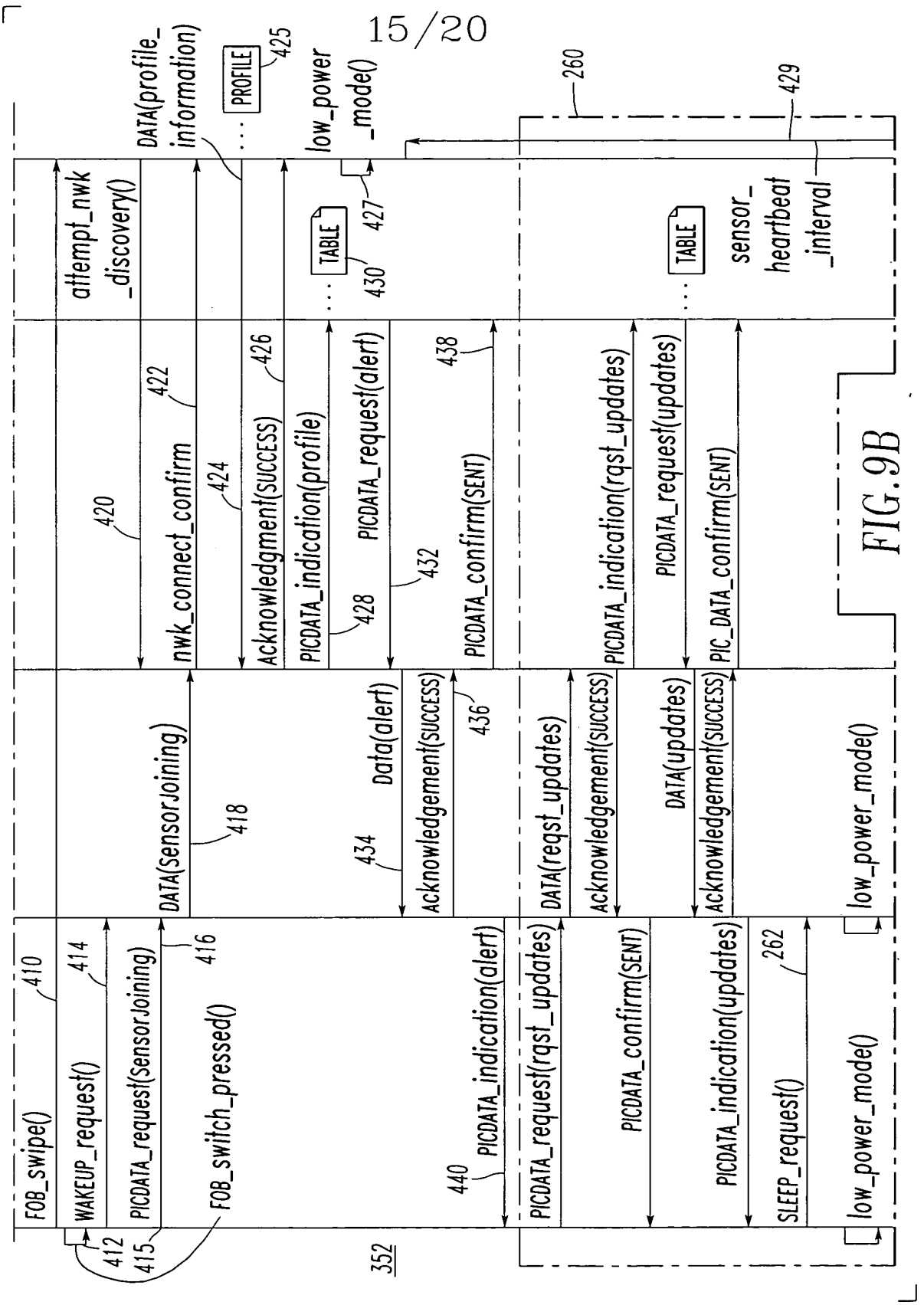
FOB_swipe()
410
WAKEUP_request()
414
PICDATA_request(SensorJoining)
416
FOB_switch_pressed()
412
415
352
DATA(SensorJoining)
418
attempt_nwk_discovery()
420
nwk_connect_confirm
422
DATA(profile_information)
PROFILE
425
Acknowledgment(SUCCESS)
424
426
low_power_mode()
427
TABLE
430
PICDATA_indication(profile)
428
PICDATA_request(alert)
432
PICDATA_confirm(SENT)
438
Data(alert)
434
acknowledgement(SUCCESS)
436
PICDATA_indication(alert)
440
low_power_mode()
260
PICDATA_request(rqst_updates)
DATA(reqst_updates)
PICDATA_indication(rqst_updates)
acknowledgement(SUCCESS)
PICDATA_request(updates)
PICDATA_confirm(SENT)
DATA(updates)
PIC_DATA_confirm(SENT)
PICDATA_indication(updates)
acknowledgement(SUCCESS)
SLEEP_request()
262
low_power_mode()
TABLE
sensor_heartbeat_interval
429

FIG. 9B

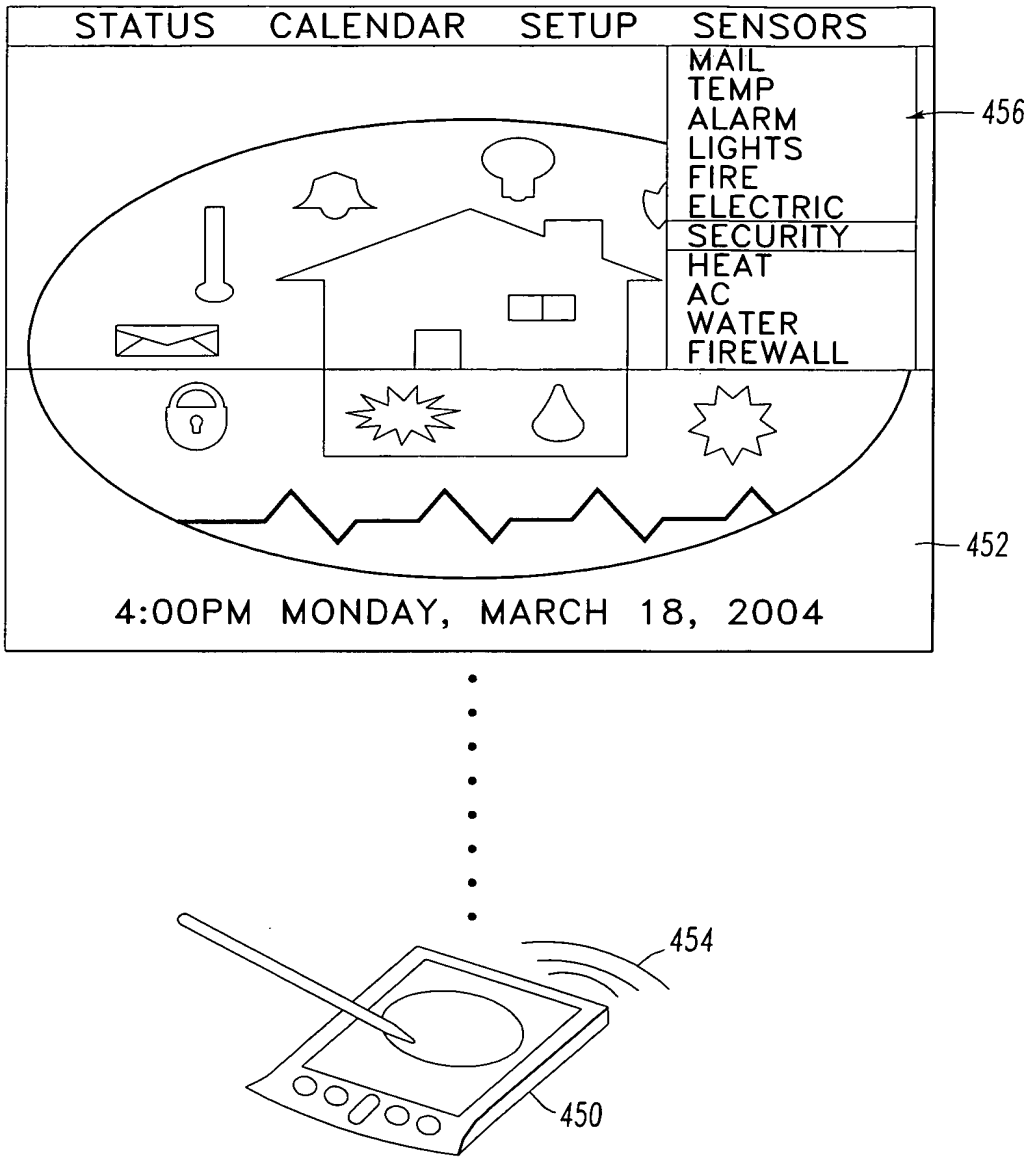
STATUS
CALENDAR
SETUP
SENSORS
MAIL
TEMP
ALARM
LIGHTS
FIRE
ELECTRIC
SECURITY
HEAT
AC
WATER
FIREWALL
456
452
4:00PM MONDAY, MARCH 18, 2004
454
450

FIG. 10

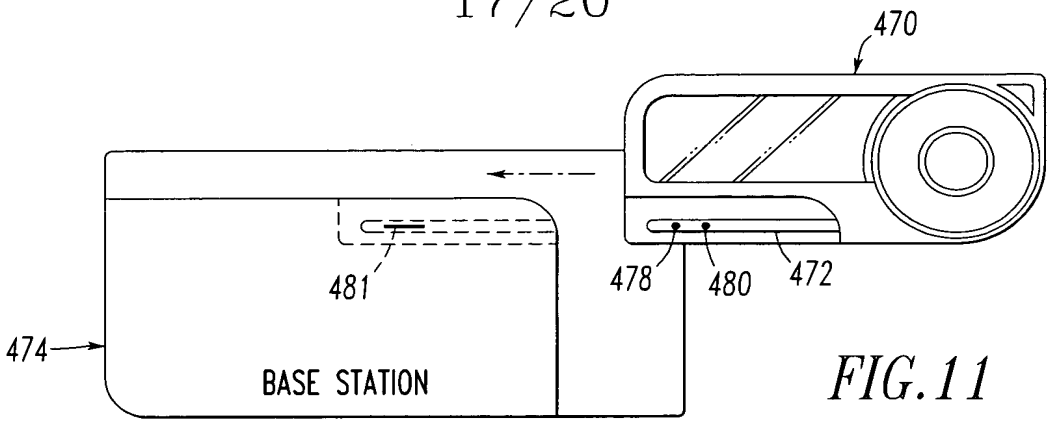

FIG. 11

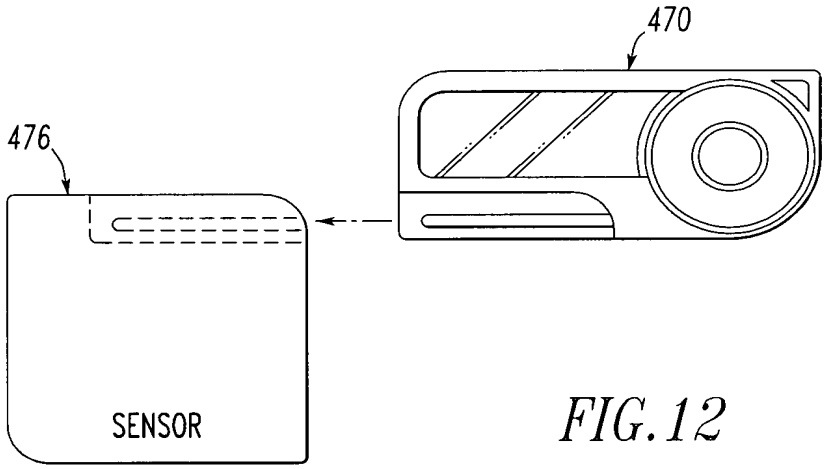

FIG. 12

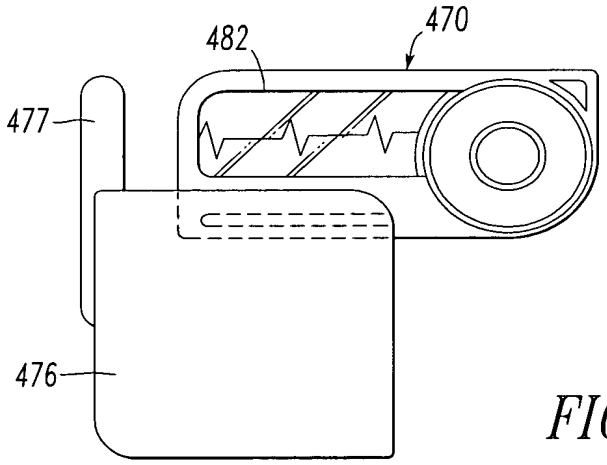

FIG. 15

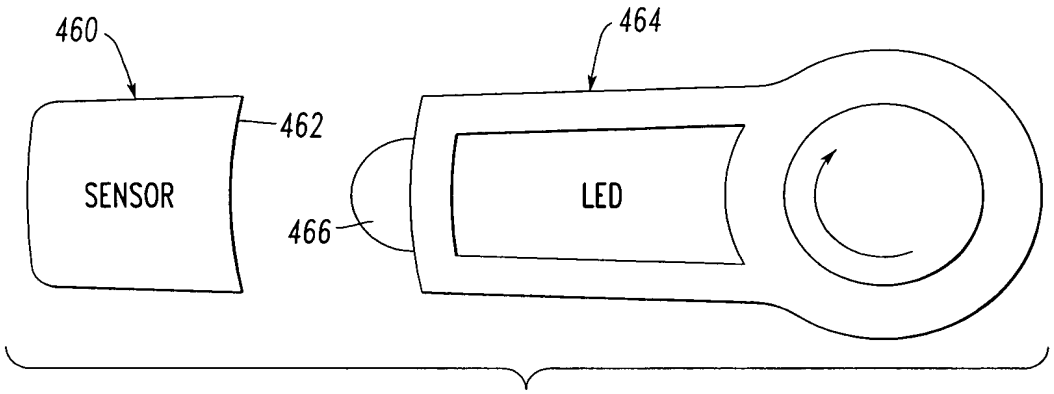

FIG. 13

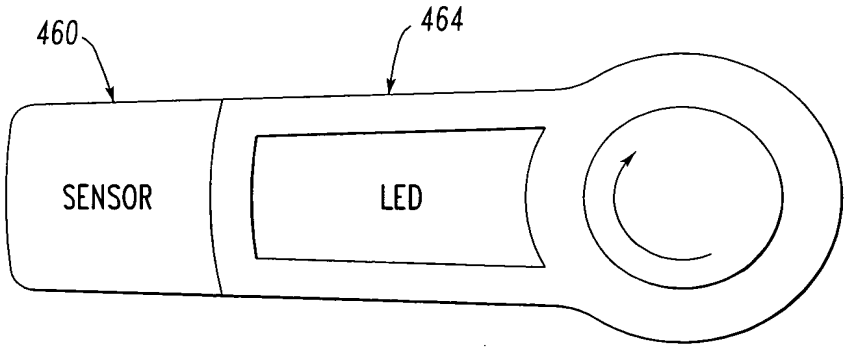

FIG. 14

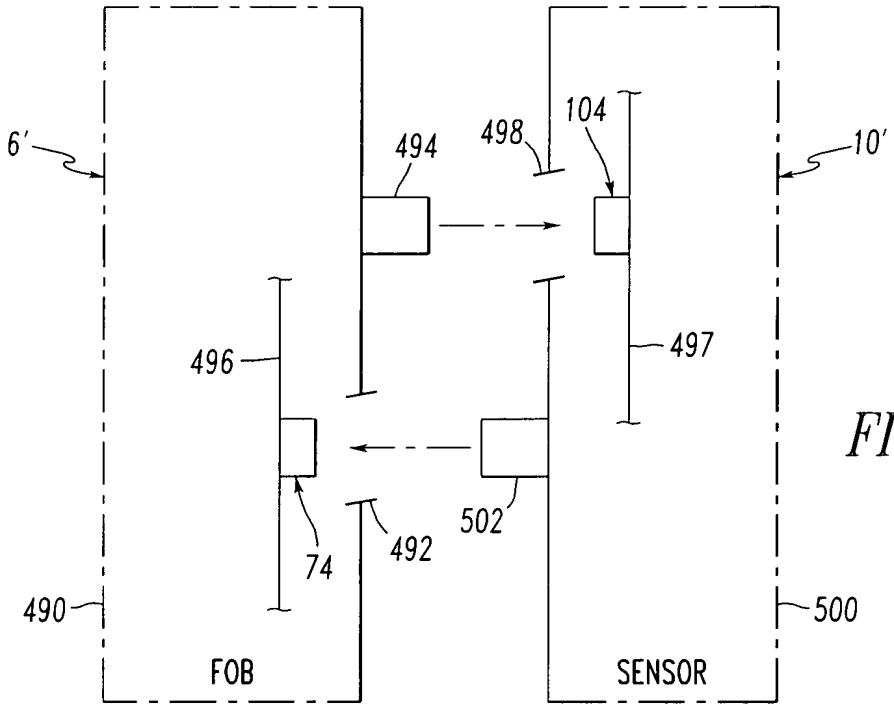

FIG.16

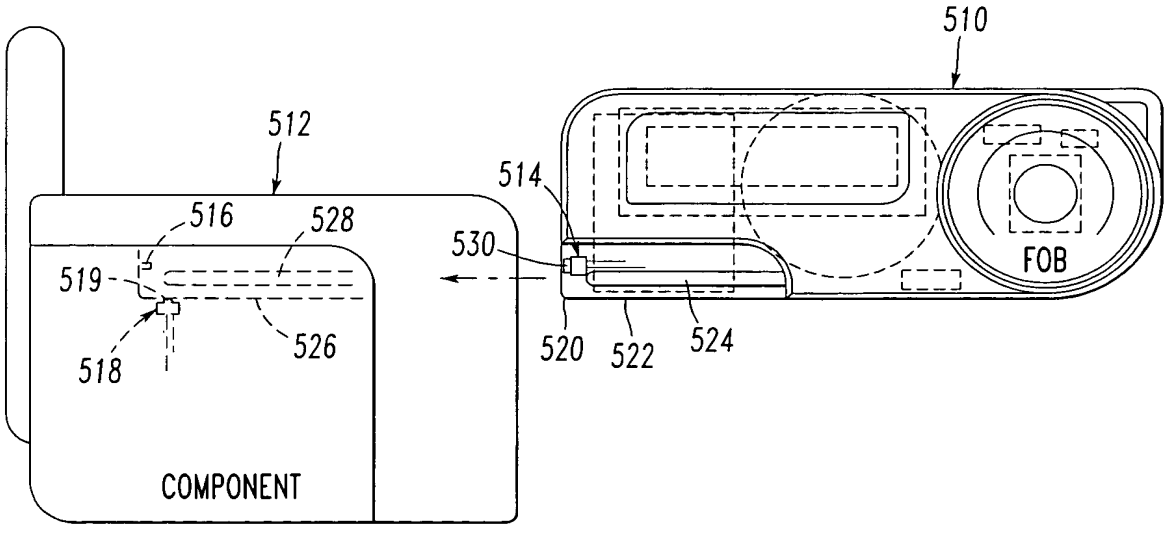

FIG.17A

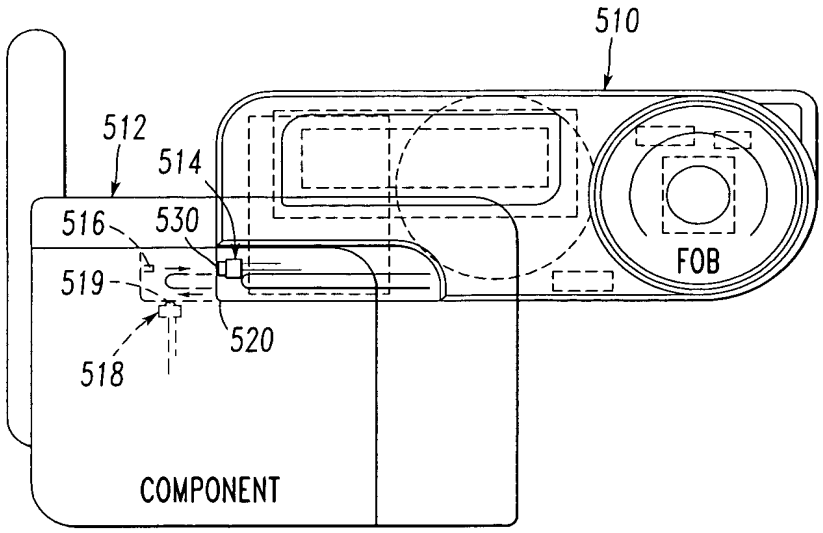

FIG. 17B

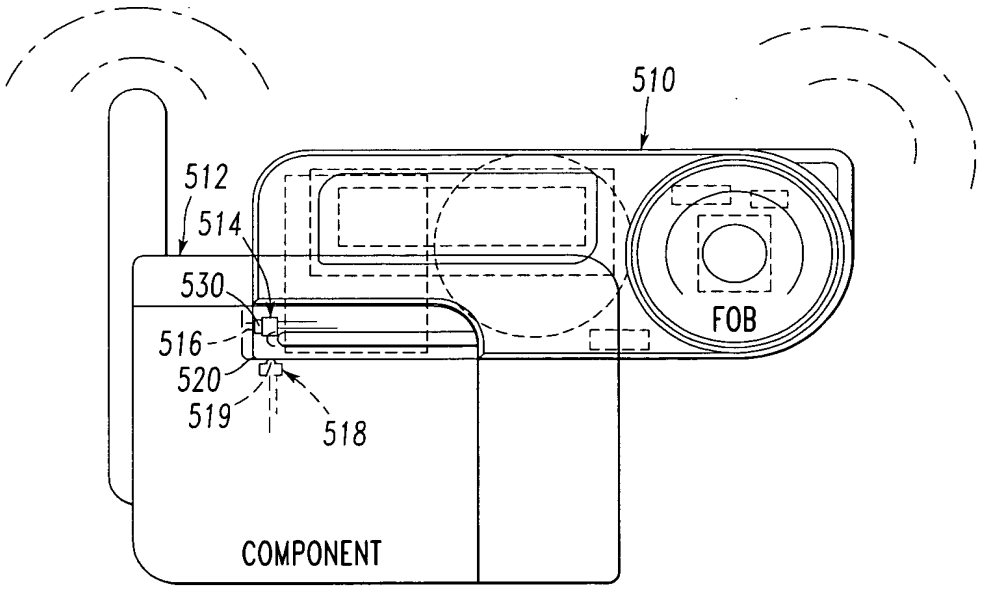

FIG. 17C